

ABSTRACT

The invention provides for a vertically oriented junction diode having a contact-antifuse unit in contact with one of its electrodes. The contact-antifuse unit is formed either above or below the junction diode, and comprises a silicide with a dielectric antifuse layer formed on and in contact with it. In preferred embodiments, the silicide is cobalt silicide, and the antifuse is preferably silicon oxide, silicon nitride, or silicon oxynitride grown on the cobalt silicide. The junction diode and contact-antifuse unit can be used as a memory cell, which is advantageously used in a monolithic three dimensional memory array.